

PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

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ORDINARY MEETING

WEDNESDAY, 7TH DECEMBER, 1949, at 5.30 p.m.,

AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 2nd November, 1949.
2. Recommendations of candidates for Fellowship.
3. Announcement of election of new Fellows.
4. Additions to the Library.

Presented.

- Bates, Marston. *The natural history of mosquitoes*. 8vo. New York. 1949. [The Publishers.]
- British Museum (Natural History). *Instructions for collectors*. No. 4A. *Insects*. By John Smart. 2nd edn. Sm. 8vo. London. 1949. [The Trustees of the British Museum.]
- Centre National de la Recherche Scientifique. *Colloques internationaux*. IV. *Endocrinologie des Arthropodes*. 8vo. Paris. 1949. [Dr. V. B. Wigglesworth.]
- Hatch, Melville H. *A century of entomology in the Pacific Northwest*. 8vo. Seattle. 1949. [The Publishers.]
- Newman, L. Hugh. *British moths and their haunts*. 4to. Leicester. 1949. [The Author.]
- Talbot, G. *Fauna of British India. Butterflies*. Vol. 2. 2nd edn. 8vo. London. 1947. [The High Commissioner for India.]

Purchased.

- Janse, A. J. T. *The moths of South Africa*. Vol. 5. Part 1. GELECHIADAE. 8vo. Pretoria. 1949.

In addition separates have been presented by The Institute for Medical Research of the Federation of Malaya, United States Department of Agriculture, Companhia de Diamantes de Angola, Mr. G. H. E. Hopkins, Professor G. D. Hale Carpenter, Dr. C. H. N. Jackson, Council for Scientific and Industrial Research of the Commonwealth of Australia, The Smithsonian Institution, Commonwealth Institute of Entomology, Mr. H. E. Box, The American Entomological Society and Lt.-Col. F. C. Fraser.

5. Nominations of Officers and Council for 1950.
6. Papers accepted for publication in the *Transactions*.
7. Admission of Fellows.

8. Communications.

As already announced, the meeting will be devoted to small exhibits of special interest requiring only short explanation.

Brief written notes on these exhibits, suitable for publication in these *Proceedings*, should reach the Hon. Secretary by Saturday, December 3rd.

Tea will be served in the Library before the meeting.

A card index of Fellows' addresses arranged on a geographical basis is now available for the use of Fellows in the Society's Rooms. Addresses are grouped under counties in Great Britain : elsewhere under Dominions, Colonies, Foreign States, etc.

ADMISSION OF FELLOWS

Any Fellow who has not been formally admitted to the Society under Chapter XIV, Section 4 of the Bye-laws and attends the meeting on 7th December, 1949, is requested to inform the Secretary before 5.15 p.m. on that date.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 2ND NOVEMBER, 1949.

Dr. V. B. Wigglesworth, F.R.S., President, in the Chair.

Present, 80 Fellows and 33 Visitors.

The minutes of the Ordinary Meeting held on 5th October, 1949, were confirmed, and signed by the President, subject to the correction on p.35 (line 5 from the bottom) of Mr. Chen Seh-Pong to Mr. Cheu Seh-Pong.

The names of the following candidates for election were read for the first time : Dr. William Beebe, L. A. A. M. Berger, W. S. I. Cox, P. S. B. Digby, F. Fincher, F. G. Hawkins, D. G. Pollard, B.Sc., C. Smedley, H. E. Webb and D. P. Webley, B.Sc.

For the second time : K. Ander, Phil.Dr., W. B. Broughton, B.Sc., C. Garrett-Jones, B.Sc., M.Sc., Dr. J. W. O. Holmes, P. Israel, M.A., F. J. Manning, B.A., H. D. Morgan, K. G. Smith, B.Sc., K. Spencer, B.A.

The Secretary read the names of the following newly elected Fellows of the Society : L. C. Adkins, 40, Park Avenue, Chelmsford, Essex ; R. F. Benson, F.R.H.S., 130, Gathurst Lane, Gathurst, near Wigan, Lancs ; Dr. D. S. Bertram, Dept. of Entomology, London School of Hygiene and Tropical Medicine, Keppel Street (Gower Street), London, W.C.1 ; R. A. L. Dibb, 255, Beverley Road, Kirkella, E. Yorks ; Dr. A. A. Granovsky, Dept. of Entomology, University of Minnesota, University Farm, St. Paul, Minn., U.S.A. ; J. L. Gregory, B.Sc., Dipl. Agric. Sci., 304, Bellhouse Road, Sheffield 5 ; Comdr. L. H. T. Hollebhone, R.N., Mombasa Club, Mombasa, Kenya ; Dr. W. E. Stanley Merrett, O.B.E., B.A., B.M., B.Ch., c/o D.M.S., Lagos, Nigeria ; Dr. Marion R. Smith, Division of Insect Identification, U.S. National Museum, Washington, D.C., U.S.A. ; A. Taylor, Belle Vue Museum, Hopwood Lane, Halifax, Yorks ; I. E. Whitehead, Minfordd, Smithy Bridge, Littleborough, Lancs ; Prof. Merle W. Wing, B.S., Dept. of Zoology and Entomology, North Carolina State College, Raleigh, North Carolina, U.S.A.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. J. E. H. Blackie, Mr. B. R. Laurence and Dr. C. R. Palmer signed the Obligation Book and were admitted Fellows of the Society.

The Secretary read for the first time the following names of Fellows nominated by Council to serve as Officers and Council for 1950 :

President.—V. B. Wigglesworth, M.A., B.Ch., M.D., F.R.S.

Treasurer.—Arthur Welti.

Secretary.—N. D. Riley, F.Z.S.

Editor.—H. Oldroyd, M.A.

Other Members of Council.—

E. B. Britton, M.Sc.

C. L. Collenette, F.R.G.S.

C. T. Gimingham, O.B.E., F.R.I.C.

N. E. Hickin, Ph.D.

B. M. Hobby, M.A., D.Phil.

H. B. D. Kettlewell, M.A., M.B., B.Chir., M.R.C.S., L.R.C.P.

C. W. Mackworth-Praed.

G. D. Morison, B.Sc., Ph.D.

A. Roebuck.

T. H. C. Taylor, D.Sc.

W. H. Thorpe, M.A., Sc.D.

B. P. Uvarov, C.M.G., D.Sc.

A. J. A. Woodcock, M.Sc.

and drew attention to the Bye-law requiring alternative nominations, if any, supported by four properly qualified Fellows of the Society to be submitted to him prior to the meeting to be held on 7th December, 1949.

Prof. G. D. Hale Carpenter exhibited an interesting cryptic spider, *Aranea raji betulae* Sulzer, taken by Dr. B. M. Hobby when sweeping a hedgerow at Waterperry, Oxon, on 31st October this year, and which he had kindly allowed him to exhibit. He said that the coloration was of special interest. The greater part of the spider's body and limbs was light reddish brown, or bark colour. At the posterior end of the abdomen an oval intensely black patch extended from the anus upwards and forwards ; this was surrounded by a paler line. The interest lay in a similar cryptic scheme on the weevil, *Exbulus triangularis* Bohemann (CRYPTORRHYNCHINAE), from Santa Clara, in which, however, the dark patch, similarly bordered with paler colour, extended over the dorsum of the thorax. As the weevil sat upon a twig of *Ficus crassiuscula* there was a suggestion either of a young dark bud, or of a hole in the twig where a smaller branch had broken away. Since Dr. Hobby had taken the spider by sweeping there were no notes on its resting attitude. Professor Carpenter pointed out that this was a good example of a similar effect being produced in different parts of the world, on Arthropods far removed in affinity, and on different parts of the body. Natural selection could do this, but any other explanation would not be applicable.

Mr. E. B. Britton exhibited living specimens of *Aulacocyclus edentulus* Macleay (Col. : PASSALIDAE) bred from larvae taken under fallen logs on Redhill golfcourse, Canberra, Australia, on 7th July, 1949. He said that adult beetles were always found with the larvae. According to Ohaus the larvae were dependent on the adults, which chew the wood into a condition suitable for consumption by their offspring. Both larvae and adults stridulated and it had been suggested that this served to keep the family together. In the larva the first two pairs of legs were relatively long and normally developed, while the third pair were reduced

to coxa and trochanter only. Stridulation was effected by rubbing the hind legs across a striated area on the mesocoxa. The adult stridulation was produced by friction between the upper surface of the abdomen and the wings.

He also exhibited a living adult female and living larva of *Megasoma gyas* Herbst (Coleoptera: SCARABAEIDAE), taken from logs of South American Rosewood at Seaforth, Lancashire, by Mr. M. G. Fraser on 19th October, 1949.

Dr. A. M. Easton, on behalf of Mr. R. W. Lloyd, exhibited two drawers of beetles and other insects collected in Nepal by Major H. W. Tilman, leader of the British Nepal Expedition, 1949.

Communications were made by Dr. N. Waloff, Mr. N. C. E. Miller and the President, abstracts of which appeared on pp. 34 and 35.

Dr. W. H. Thorpe, Professor H. G. Champion, Professor G. C. Varley and Mr. J. R. Busvine took part in the discussion following Dr. Waloff's paper, when questions concerning the movements of grasshoppers, parasitization and difficulties encountered in breeding experiments were raised.

In connection with Mr. Miller's paper, Dr. W. E. China and Professor G. D. Hale Carpenter expressed the view that stridulation was part of the insect's defensive mechanism and usually associated with the thwarting of some instinct.

Professor Varley, on behalf of Mr. Ernest Taylor, of the Hope Department, University Museum, Oxford, commented on stridulation in *Reduvius personatus* L. Mr. Taylor reported that many nymphs of this species in all instars had been kept under observation, but were never seen to stridulate, although it was generally accepted that they did. The adults of both sexes stridulated violently on being picked up with forceps or otherwise threatened. After a few seconds, however, stridulation ceased and was not resumed unless the insect was released and picked up a second time. It would appear that stridulation in this species served as a warning to possible enemies. Readio (1927, *Univ. Kansas Sci. Bull.* 17: 28) stated that during preliminaries to copulation and sometimes during copulation the female would stridulate. Although he himself had witnessed copulation several times he was unable to confirm this observation.

Dr. O. W. Richards gave it as his opinion that stridulatory apparatus was too highly complicated to have been evolved merely to express "thwartedness." Mrs. K. J. Richardson referred to a red-winged Pyrenean grasshopper which made a very startling noise when disturbed. Mention was made of the fact that grasshoppers were reputed to have no auditory organs, but Professor Varley emphasized that recent research had undermined this belief.

Dr. E. C. Zimmerman, a visitor, referred to the possible association between stridulation and copulation and said that the Hawaiian sugar-cane leafhopper was often heard stridulating when caged, but he had never observed it to be accompanied by copulation.

In the discussion which followed his talk on fuel consumption by insects in flight, the President said, in reply to an enquiry from Professor Carpenter, that the degree of overheating caused by the insect's drawing on its fat reserve was not significant. Mr. J. M. Smith, of University College, London, a visitor, referred to experiments he had carried out in this field in the course of which he had proved that insects did ten times as much work per 1 lb. of muscle as man.

Mr. P. F. Mattingly said that it was evident that the researches of which Dr. Wigglesworth had been speaking would be of fundamental importance to our understanding of the behaviour of insects in the field. A good example of this was afforded by the work on the swarming of *Aedes cantans* described by Nielsen at the Stockholm Entomological Congress. Nielsen observed that swarming in

this species took place, approximately, at sunset and sunrise. Shortly before swarming in the evening the mosquitoes took a meal of sugary substance, apparently honeydew, in the grass. At the end of the morning swarming they fell to earth with their abdomens collapsed and a few moments later were again gorged with honeydew. The whole process was very reminiscent of the taking on and exhaustion of "fuel" pictured by Dr. Wigglesworth. The females did not take part in the swarms, but they ascended to the tree-tops in the evening and descended in the morning. Nielsen found both sexes of this blood-sucking species gorged with honeydew, a most important observation. It had long been assumed that male mosquitoes rely for their nourishment on plant sugars and the females of certain genera had the proboscis adapted for securing this type of food and were incapable of drawing blood. From what Dr. Wigglesworth had said it seemed likely that the females of blood-sucking species also required plant sugars, especially for those types of behaviour involving sudden intense outbursts of activity. That this was so had been suspected by many workers who had had occasion to feed mosquitoes in the laboratory. Not only was glucose, for example, very readily taken at all times, but caged mosquitoes could live a full lifetime on this substance alone, and, indeed, thrived better on it than on an unmixed diet of blood. In view of the probable importance of plant sugars in the economy of the mosquitoes it was remarkable that almost nothing precise was known as to when, where or how these were obtained. There was considerable scope here for the amateur naturalist. That such knowledge will prove to be applicable for purposes of control was by no means impossible.

N. D. RILEY, *Honorary Secretary.*

The next meeting (Annual Meeting) will be held on 18th January, 1950.

NOTICES

In addition to the *Transactions and Proceedings* (Series A, B and C), the following publications are available on application at the Society's rooms :—

THE GENERIC NAMES OF BRITISH INSECTS, WITH CHECK LISTS OF THE SPECIES, prepared by the Committee on Generic Nomenclature of the Royal Entomological Society of London, with the assistance of the Department of Entomology of the British Museum (Natural History) :—

Part 1. Recommendations relating to the publication of the Committee's

Reports	Price
2. Rhopalocera	6d.
3. Odonata	3s. 6d.
4. Neuroptera	3s. 6d.
5. Hymenoptera	15s. 0d.
6. Coleoptera Carabidae	10s. 0d.
7. Coleoptera Hydradeptera	5s. 0d.
8. Hemiptera Heteroptera	39s. 0d.
9. Coleoptera Staphylinidae	40s. 6d.

HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS.

The Society has undertaken the issue of a series of publications intended to provide illustrated Keys to the whole of the British Insect Fauna so far as this is possible.

It is proposed to cover this field in a series of ten volumes, arranged as follows :—

I. Part 1. General Introduction.	Part 9. Ephemeroptera.†
„ 2. Thysanura.	„ 10. Odonata.
„ 3. Protura.	„ 11. Thysanoptera.*
„ 4. Collembola.*	„ 12. Neuroptera.
„ 5. Dermaptera and Orthoptera.	„ 13. Mecoptera.
„ 6. Plecoptera.†	„ 14. Trichoptera.
„ 7. Psocoptera.*	„ 15. Strepsiptera.
„ 8. Anoplura.	„ 16. Siphonaptera.
II. Hemiptera.*	
III. Lepidoptera.	
IV and V. Coleoptera.*	
VI. Hymenoptera : Symphyta* and Aculeata.*	
VII. Hymenoptera : Ichneumonicoidea.*	
VIII. Hymenoptera : Cynipoidea, Chalcidoidea and Serphoidea.	
IX. Diptera : Nematocera† and Brachycera.	
X. Diptera : Cyclorrhapha.*	

The following parts are now available :—

Vol. I, Part 5. Dermaptera and Orthoptera.	By W. D. Hincks.	Price 3s. 6d. plus postage.
Vol. I, Part 10. Odonata.	By F. C. Fraser.	Price 7s. 6d. plus postage.
Vol. IX, Part 1. Diptera : Introduction and Key to Families.	By H. Oldroyd.	Price 7s. 6d. plus postage.

Parts marked † are in the press, those marked * in preparation.

Orders for the complete series or for separate parts can be placed with the Registrar at the Society's rooms now, but prices can only be quoted for those parts already issued.

Fellows of the Society may purchase one copy at a discount of 25 per cent. ; additional copies at the full published price.

STYLOPS, a Journal of Taxonomic Entomology.

1932-1935. Vols. 1-4 (all issued). Price £1 16s. 0d. each ; to Fellows £1 7s. 0d.

ABSTRACT OF PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON. 1935. Nos. 1-6 (all issued). 3s. 0d.

HUBNER : A BIBLIOGRAPHICAL AND SYSTEMATIC ACCOUNT OF THE ENTOMOLOGICAL WORKS OF JACOB HUBNER AND THE SUPPLEMENTS THERETO. In 2 vols. By Francis Hemming. Price Vol. 1. 605 pp. £1 15s. 0d. ; Vol. 2. 275 pp. 15s. 0d.

THE HISTORY OF THE ENTOMOLOGICAL SOCIETY OF LONDON, 1833-1933. By S. A. Neave, assisted by F. J. Griffin. Price 10s. 6d.

Published by THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON and sold at its rooms, 41, Queen's Gate, S.W. 7, price 6d.